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Basin approach to the study of erosion processes occurring in the territory of the Russian plain

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Abstract

This paper deals with main types of operational-territorial units used in the spatial analysis of slope erosion development. The analysis of the entire system of operational-territorial units used in the study of slope erosion processes in the plains of the temperate zone of the Earth, shows that a drainage (river) basin is an operational and territorial unit most suitable for this purpose. This is because of the fact that the basins are a geosystemic formation and reflect the specific nature of surface slope runoff, due to which a range of ero-sional processes occurs. An important feature of the basin approach is the simplicity in defining these units in the geographical space and the reasonable transition to other scale levels due to hierarchy feature of river basins. Their limited use is associated with the landscape specifics of the terrain: such as ice and arid zones of the Earth. We have electronically mapped the territory of lowland and upland landscapes of the eastern part of the Russian Plain with total area of 150,000 km2 by defining the boundaries of 3,331 basins used in the anal-ysis of soil and gully natural-artificial erosion. Other types of operational-territorial units such as the regular geometric grids, the political-administrative division, and sample characteristics can be used for collection of data geobank but poorly suited for identification of erosion patterns. Landscape territorial units allow perform-ing a stiffly accurate spatial analysis of erosion and its determining factors. The factor limiting their use is the complexity of landscapes defining, lack of their internationally standardized taxonomy and poor cartographic exploration of the territory at regional and local generalization levels.

Keywords

Landscape, Operational-territorial unit, River basin, Soil and gully erosion